

regard to the cells, whether the cell is addressed to the communication terminal, hereinafter referred to as self communication terminal, or communication terminals other than said self communication terminal;

a cell-disassembling unit for disassembling the cells received through said communication line to assemble a multiplexed signal;

a multiplexed signal generator for multiplexing data to be transmitted from said self communication terminal itself to generate a multiplexed signal;

a cell-forming unit for forming the multiplexed signal generated in the multiplexed signal generator into a cell;

a cell re-multiplexer for re-multiplexing the cells generated by said cell-forming unit and the cells addressed to the communication terminals other than said self communication terminal which are discriminated in said discriminator; and

bypass means for directly transmitting said received cells when abnormality occurs in said self communication terminal,

wherein said cell-disassembling unit assembles plural multiplexed signals.

wherein said cell disassembling unit comprises:

first storage means for storing a first multiplexed signal of the plural multiplexed signals,

second storage means for storing a second multiplexed signal.

third storage means for storing the multiplexed signal generated in said multiplexed signal generator.

fourth storage means for storing the data other than the multiplexed signal to be transmitted from said communication terminal, and

read-out control means for controlling the read-out of the multiplexed signals stored in said first to fourth storage means,

wherein said cell multiplexing unit forms the multiplexed signals read-out by said read-out control means into cells and transmits the cells thus obtained.

24. A communication terminal which has functions of disassembling multiplexed signals obtained by multiplexing data into cells of fixed length, adding each of the cells with a header containing destination information and transmitting/receiving the cell added to the header through a communication line, comprising:

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a discriminator for referring to the destination information of each of cells which are received through the communication line to discriminate, with regard to the cells, whether the cell is addressed to the communication terminal concerned, hereinafter referred to as self communication terminal, or communication terminals other than said self communication terminal;

a cell-disassembling unit for disassembling the cells received through said communication line to assemble a multiplexed signal;

a multiplexed signal generator for multiplexing data to be transmitted from said self communication terminal itself to generate a multiplexed signal;

a cell-forming unit for forming the multiplexed signal generated in the multiplexed signal generator into a cell;

a cell re-multiplexer for re-multiplexing the cells generated by said cell-forming unit and the cells addressed to the communication terminals other than said self communication terminal which are discriminated in said discriminator;

first input and output terminals and second input and output terminals, wherein said self communication terminal discriminates and re-multiplexes cells received through said first input terminal through said communication line and then transmits the re-multiplexed cells from said first output terminal, and also discriminates and re-multiplexes cells received through said second input terminal and then transmits the re-multiplexed cells from said second output terminal; and

bypass means for short-circuiting said input terminal and said output terminal to each other when abnormality occurs in said self communication terminal,

wherein said cell-disassembling unit assembles plural multiplexed signals,

wherein said cell disassembling unit comprises:

first storage means for storing a first multiplexed signal of the plural multiplexed signals,

second storage means for storing a second multiplexed signal,

third storage means for storing the multiplexed signal generated in said multiplexed signal generator,

fourth storage means for storing the data other than the multiplexed signal to be transmitted from said communication terminal, and

read-out control means for controlling the read-out of the multiplexed signals stored in said first to fourth storage means,

wherein said cell multiplexing unit forms the multiplexed signals read-out by said read-out control means into cells and transmits the cells thus obtained.

25. A communication terminal for disassembling a multiplexed signal

obtained by multiplexing data into cells of fixed length, and transmitting/receiving the multiplexed signal through a communication line, comprising:

a multiplexed signal generator for multiplexing data to be transmitted from said communication terminal, thereby generating a multiplexed signal;

a cell-disassembling unit for disassembling the cells received through said communication line to assemble a multiplexed signal;

a cell multiplexing unit for forming the multiplexed signal assembled and the multiplexed signal generated in said multiplexed signal generator into cells, and transmitting the cells through said communication line; and

a bypass for short-circuiting a reception system and a transmission system of said communication line when abnormality occurs in said communication terminal,

wherein said cell-disassembling unit assembles plural multiplexed signals,

wherein said cell disassembling unit comprises:

first storage means for storing a first multiplexed signal of the plural multiplexed signals,

second storage means for storing a second multiplexed signal,

third storage means for storing the multiplexed signal generated in said multiplexed signal generator,

fourth storage means for storing the data other than the multiplexed signal to be transmitted from said communication terminal, and

read-out control means for controlling the read-out of the multiplexed signals stored in said first to fourth storage means,

wherein said cell multiplexing unit forms the multiplexed signals read-out by said read-out control means into cells and transmits the cells thus obtained.

26. A communication terminal having functions of disassembling a multiplexed signal obtain by multiplexing data into cells of fixed length, adding a header containing destination information to each of the cells and transmitting/receiving the cells through a communication line, comprising:

a cell-disassembling unit for disassembling cells received through said communication line and assembling a multiplexed signal for every destination information by referring to destination information;

a multiplexed signal generator for multiplexing data to be transmitted from the communication terminal in question;

a re-multiplexing unit for re-multiplexing the multiplexed signal generated in said multiplexed signal generator and the multiplexed signals addressed to other communication terminals in the multiplexed signals assembled;

a cell-forming unit for forming said re-multiplexed multiplexed signals into cells and transmitting the signals formed into the cells through a communication line; and

bypass means for directly transmitting the received cells when abnormality occurs in said communication terminal,

wherein said cell-disassembling unit assembles plural multiplexed signals,

wherein said cell disassembling unit comprises:

first storage means for storing a first multiplexed signal of the plural

multiplexed signals,

second storage means for storing a second multiplexed signal,

third storage means for storing the multiplexed signal generated in said multiplexed signal generator,

fourth storage means for storing the data other than the multiplexed signal to be transmitted from said communication terminal, and

read-out control means for controlling the read-out of the multiplexed signals stored in said first to fourth storage means,

wherein said cell multiplexing unit forms the multiplexed signals read-out by said read-out control means into cells and transmits the cells thus obtained.

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21. A communication system comprising a plurality of communication terminals for disassembling a multiplexed signal obtained by multiplexing data into cells of fixed-length and transmitting/receiving the cells through a communication line,

wherein said plurality of communication terminals are connected in series on a communication path,

communication terminals located at both ends in said plurality of communication terminals connected in series are respectively connected to each other through a communication line to form a ring-configuration communication path among said communication terminals, and

each of said plurality of communication terminal assembles a multiplexed signal from cells received through said communication line, and receives a multiplexed signal addressed thereto while cell-multiplexing and transmitting

multiplexed signals addressed to other communication terminals and the multiplexed signal obtained by multiplexing data to be transmitted from the communication terminal in question, together with the assembled multiplexed signal,

wherein an output terminal of an  $i$ -th communication terminal, wherein  $i$  represents an integer of 1 or more and  $(n-1)$  or less is connected to an input terminal of an  $(i+1)$ -th communication terminal,

wherein an output terminal of an  $(n-1)$ -th communication terminal is connected to an input terminal of an  $n$ -th corresponding terminal, and

wherein an output terminal of an  $n$ -th communication terminal is connected to an input terminal of said first communication terminal, whereby a ring-shaped transmission path is constructed among said  $n$  communication terminals so that data communication can be performed through said transmission path among said  $n$  communication terminals.

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~~28.~~ A communication system comprising a plurality of communication terminals in disassembling a multiplexed signal obtained by multiplexing data into cells of fixed length and transmitting/receiving the cells through a communication line,

wherein said plurality of communication terminals are connected in series to one another on two communication paths which are different from each other in communication direction,

communication terminals located at both ends in said plurality communication terminals connected in series through said two communication paths are connected to each other through two communication lines having different

communication directions, thereby forming a dual ring-configuration communication path between said communication terminals, and

each of said plurality of communication terminals assembles a multiplexed signal from cells received through said two communication paths, and receives a multiplexed signal addressed thereto while cell-multiplexing and transmitting multiplexed signals addressed to other communication terminals and the multiplexed signal obtained by multiplexing data to be transmitted from the

*(b) (1) and (2)*  
communication terminal in question, together with the assembled multiplexed signal, wherein an output terminal of an  $i$ -th communication terminal, wherein  $i$  represents an integer of 1 or more and  $(n-1)$  or less is connected to an input terminal of an  $(i+1)$ -th communication terminal,

wherein an output terminal of an  $(n-1)$ -th communication terminal is connected to an input terminal of an  $n$ -th corresponding terminal, and

wherein an output terminal of an  $n$ -th communication terminal is connected to an input terminal of said first communication terminal, whereby a ring-shaped transmission path is constructed among said  $n$  communication terminals so that data communication can be performed through said transmission path among said  $n$  communication terminals. --

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